The Readiness Challenge

Tsunami hazard planning is widely neglected due to the comparative rarity of tsunamis. Because of that rarity, individuals and communities are not as "tsunami-aware" as they should be. Furthermore, the level of tsunami readiness varies significantly from community to community. Avoidable casualties and property damage eventually will be significant unless communities at risk are prepared for tsunamis. Readiness involves two key components: *awareness* and *mitigation*. *Awareness* involves educating key decision makers, emergency managers, and the public about the nature (physical processes) and threat (frequency of occurrence, impact) of a hazard. *Mitigation* involves taking steps before a hazardous event occurs to lessen the impact (loss of life and property) of that event when it does occur. As with earthquakes, there is no question tsunamis will occur. It's just a matter of when, and how bad it will be.

- The key to increased awareness of the hazard is education
- The key to effective mitigation is pre-event planning

The National Weather Service (NWS) TsunamiReady program meets both elements of a useful readiness effort: it is designed to educate local emergency management officials and their public, and to promote a well-designed tsunami emergency response plan for each community.

Frequently Asked Questions About TsunamiReady

What is TsunamiReady?

- A National Weather Service (NWS) initiative that promotes tsunami hazard preparedness as an active collaboration among Federal, state and local emergency management agencies, the public, and the NWS tsunami warning system. This collaboration supports better and more consistent tsunami awareness and mitigation efforts among communities at risk. The TsunamiReady program is based on the NWS StormReady model.
- The main goal is improvement of public safety during tsunami emergencies.

Who is TsunamiReady For?

- Coastal communities which are at risk of a tsunami.

What makes a community TsunamiReady?

- Establishing an Emergency Operations Center.
- Ability to disseminate a Tsunami Warning (sirens, local media).
- Tsunami Hazard Plan.
- Community awareness program.
- Multiple ways to receive NWS tsunami warnings.
    1. Emergency Management Weather Information Network (EMWIN) receiver
    2. NOAA Weather Radio (NWR)
    3. NOAA Weather Wire drop

Can a community become TsunamiReady without being StormReady?

- Since the new combined Storm/TsunamiReady application form was issued in 2002, communities being certified for TsunamiReady also must pass all StormReady criteria.
- StormReady requires access to local weather monitoring equipment (Guideline 3) and some furher administrative requirements (Guideline 6). Other than that, the requirements are the same.

Why do we need a TsunamiReady Program?

- Create minimum standard guidelines for a community to follow for adequate tsunami readiness.
- Encourage consistency in educational materials and response among communities and states.
- Recognize communities that have adopted TsunamiReady guidelines.
- Increase public awareness and understanding of the tsunami hazard.
- Improve community pre-planning for tsunami disasters.

Who decides if a community is TsunamiReady?

- Oversight of the TsunamiReady program is accomplished within the NWS by the National StormReady Board (the Board).
- The Board is responsible for changes in community recognition criteria. Proposed criteria changes shall be directed to the Board for action.
- Local boards decide if a community has attained Storm/TsunamiReady status. The local board consists of the local NWS office meteorologist-in-charge and warning coordintation meteorologist, the Tsunami Warning Center geophysicist-in-charge, a representative from the state department of emergency services, and a representative from the National Tsunami Hazard Mitigation Program.

Who do we contact to become a TsunamiReady Community?

- Communities in California, Oregon, Washington, British Columbia, and Alaska contact the West Coast & Alaska Tsunami Warning Center in Palmer, AK. Communities in Hawaii contact the Pacific Tsunami Warning Center.
- Or, contact your local National Weather Service Forecast Office.

- The web site is http://wcatwc.arh.noaa.gov/tready.htm .

Does it cost anything to become a TsunamiReady Community?

- There may be costs involved with upgrading the reception and dissemination infrastructure of the local community to meet the criteria.

Do we get money for being TsunamiReady?

- The National Weather Service does not provide funding to communities. However, participating in this program would improve positioning to receive State and Federal funds. It is the community's responsibility to obtain funding.

What are the benefits for being TsunamiReady?

- Community is more prepared to SAVE LIVES.
- Increase contacts with experts (emergency managers, researchers, NWS personnel).
- Identify community readiness resource needs.
- Enhances core infrastructure to support other community concerns.

Where can I get more information on TsunamiReady?

- The West Coast & Alaska Tsunami Warning Center's web page: http://wcatwc.arh.noaa.gov.
- The Warning Coordination Meteorologist at your local National Weather Service office.
- The National Weather Service's StormReady Program web page: http://www.nws.noaa.gov/stormready.

TsunamiReady Communities

Recent TsunamiReady Communities

Date	Community	State
06/30/2001	Ocean Shores	Washington
01/10/2002	Long Beach	Washington
01/18/2002	Seward	Alaska
05/29/2002	Crescent City	California
06/04/2002	Quinault Indian Tribe	Washington
08/12/2002	Cannon Beach	Oregon
09/09/2002	Homer	Alaska
07/07/2003	Sitka	Alaska
10/07/2003	Kodiak City	Alaska

06/21/2004	University of California Santa Barbara (UCSB)	California

TsunamiReady Program Objectives

TsunamiReady promotes tsunami hazard readiness as an active collaboration among Federal, state and local emergency management agencies, the public, and the NWS tsunami warning system. This collaboration supports better and more consistent tsunami awareness and mitigation efforts among communities at risk. The main goal is improvement of public safety during tsunami emergencies. To meet this goal, the following objectives need to be met:

- Create minimum standard guidelines for a community to follow for adequate tsunami readiness.
- Encourage consistency in educational materials and response among communities and states.
- Recognize communities that have adopted TsunamiReady guidelines.
- Increase public awareness and understanding of the tsunami hazard.
- Improve community pre-planning for tsunami disasters.

TsunamiReady Community Requirements

Processes and guidelines used in TsunamiReady generally resemble those of the NWS StormReady program. TsunamiReady establishes minimum guidelines for a community to be awarded the TsunamiReady recognition. Communities that accept the challenge to become tsunami ready and meet requirements set by the NWS TsunamiReady program are designated as TsunamiReady communities. Guidelines to achieve TsunamiReady recogntion are given in the following table. Each guideline is fully discussed on the next page. Four community categories (based on popuation) are used to measure tsunami readiness.

NOTE: In 2002, the NWS approved a new TsunamiReady application form which combines both the StormReady and TsunamiReady programs. Since this time, all communitites applying for TsunamiReady recognition must pass both StormReady and TsunamiReady requirements. The StormReady requirements not part of the original TsunamiReady program are Guideline 3, and part of Guideline 6.

Guidelines	**Population**			
	< 2,500	**2,500 - 14,999**	**15,000 - 40,000**	**> 40,000**
1: Communications & Coordination				
24 hr Warning Point (WP)	X*	X*	X	X
Emergency Operations Center	X*	X*	X	X
2: NWS Warning Reception				
Number of ways for EOC/WP to receive	3	4	4	4

NWS tsunami messages (If in range, one must be NWR with tone-alert, NWR-SAME is preferred)				
3: Hydrometeorological Monitoring				
Number of systems to monitor hydrometeoroligical data	1	2	3	4
4: Warning Dissemination				
Number of ways for EOC/WP to disseminate warnings to public	1	2	3	4
NWR tone-alert receivers in public facilities (where available)	X	X	X	X
For county/burrough warning points, county/burrough communication network ensuring information flow between communities	X	X	X	X
5: Community Preparedness				
Number of annual tsunami/weather safety programs	1	2	3	4
Designate/establish tsunami shelter/area in safe zone	X	X	X	X
Designate tsunami evacuation areas and evacuation routes, and install evacuation route signs	X	X	X	X
Provide written, locality specific, tsunami hazard response material to public	X	X	X	X
Schools: encourage tsunami hazard curriculum, practice evacuations, and provide safety material to staff and students	X	X	X	X
6: Administrative				
Develop formal tsunami hazard operations plan	X	X	X	X
Yearly meeting/discussion by emergency manager with NWS	X	X	X	X
Visits by NWS official to community at least every other year	X	X	X	X

* For cities or towns with less than 15,000 people, a 24-hour warning point and EOC are required; however, another jurisdiction within the county may provide that resource. For smaller communities in Alaska and Pacific Regions with less than 2,500 residents and no county agency to act as a 24 hour warning point, the community must designate responsible persons who are able to receive warnings 24 hours per day and have the authority to activate local warning systems.

Guideline 1: Communications and Coordination Center

A key to effective hazards management is effective communication. This is especially true in

tsunami emergencies, since wave arrival times may be measured in just minutes. Such a "short-fused" event requires an immediate, but careful, systematic and appropriate response. To ensure such a proper response, communities must have established the following:

1. *24-Hour Warning Point.* To receive recognition under the TsunamiReady Program, an applying agency will need to have a 24-hour warning point (WP) that can receive NWS tsunami information and provide local reports and advice. Typically, this might be a law enforcement or fire department dispatching point. For cities or towns without a local dispatching point, another jurisdiction within the county could act in that capacity for them. For communities in the Alaska and Pacific Regions with less than 2,500 residents and no county agency to act as a 24 hour warning point, the community must designate responsible persons who are able to receive warnings 24 hours per day and have the authority to activate local warning systems. The warning point will need to have:

- 24 hour operations.
- Warning reception capability.
- Warning dissemination capability.
- Ability and authority to activate local warning system(s).

2. *Emergency Operations Center.* All agencies must have an emergency operations center (EOC). For communities with less than 15,000 residents, the EOC may be provided by another jurisdiction within the county. The EOC must be staffed during tsunami events to execute the warning point's tsunami warning functions. Summarized below are tsunami-related roles of an EOC:

- Activated based on predetermined guidelines related to NWS tsunami information and/or tsunami events.
- Staffed with emergency management director or designee.
- Must have warning reception/dissemination capabilities equal to or better than the warning point.
- Ability to communicate with adjacent EOCs/Warning Points.
- Ability to communicate with local NWS office or Tsunami Warning Center.

Guideline 2: NWS Warning Reception

Warning points and EOCs each need multiple ways to receive NWS tsunami warnings. TsunamiReady guidelines to receive NWS warnings in an EOC/WP require a combination of the following, based on population:

- NOAA Weather Radio (NWR) receiver with tone alert. Specific Area Message Encoding (SAME) is preferred. Required for recognition only if within range of transmitter.
- NOAA Weather Wire drop: Satellite downlink data feed from NWS.
- Emergency Managers Weather Information Network (EMWIN) receiver: Satellite feed and/or VHF radio transmission of NWS products.
- Statewide Telecommunications System: Automatic relay of NWS products on statewide emergency management or law enforcement system.
- Statewide warning fan-out system: State authorized system of passing message throughout warning area.
- NOAA Weather Wire via Internet NOAAport Lite: Provides alarmed warning messages through a dedicated Internet connection.
- Direct link to NWS office: e.g. amateur or VHF radio.
- E-mail from Tsunami Warning Center: Direct e-mail from Warning Center to emergency manager.
- Pager message from Tsunami Warning Center: Page issued from Warning Center

directly to EOC/WP.
- Radio/TV via Emergency Alert System: Local Radio/TV or cable TV.
- US Coast Guard broadcasts: WP/EOC monitoring of USCG marine channels.
- National Warning System (NAWAS) drop: FEMA-controlled civil defense hotline.

Guideline 3: Hydrometeorological Monitoring

This Guideline relates solely to the StormReady requirements for the combined Storm/TsunamiReady program. While receipt of warnings is crucial to the success of any EOC or warning point, there should also be a means of monitoring weather information, especially radar data. To obtain combined Storm/TsunamiReady recognition, each EOC/WP (based on population) should have some combination of the following recommended means of gathering weather information:

- Internet
- Television/Cable TV/Radio
- Two-way radio
- Emergency Management Weather Information Network (EMWIN)
- Local systems for monitoring weather

Guideline 4: Warning Dissemination

Upon receipt of NWS warnings or other reliable information suggesting a tsunami is imminent, local emergency officials should communicate the threat with as much of the population as possible. To be recognized as Storm/TsunamiReady, a community must have NOAA Weather Radio in the following facilities (when in range of an NWR transmitter):

Required Locations:

- 24-hour warning point
- Emergency operations center
- City Hall
- School superintendent office

Recommended Locations:

- Courthouses
- Public libraries
- Hospitals
- All schools
- Fairgrounds
- Parks and recreation areas
- Public utilities
- Sports arenas
- Transportation departments

In addition, recognition will be contingent upon having one or more of the following means (based on population) of ensuring timely warning dissemination to citizens:

- Cable television audio/video overrides.
- Local Flood warning systems with no single point of failure.

- Other locally-controlled methods like a local broadcast system or sirens on emergency vehicles.
- Outdoor warning sirens.
- Phone messaging (dial-down) systems.
- Counties Only: A countywide communications network that ensures the flow of information between all cities and towns within its borders. This would include acting as a warning point for the smaller towns.

Guideline 5: Community Preparedness

Public education is vital in preparing citizens to respond properly to tsunami threats. An educated public is more likely to take steps to receive tsunami warnings, recognize potentially threatening tsunami events, and respond appropriately to those events. Communities seeking recognition in the Storm/TsunamiReady Program must:

- Conduct or sponsor tsunami and weather safety awareness programs in schools, hospitals, fairs, workshops, and community meetings (number of talks per year is based on population). These may be part of multi-hazard presentations affecting local communities/regions (e.g., flood, tsunami, wildfire).
- Define tsunami evacuation areas and evacuation routes, and install evacuation route signs.
- Designate a tsunami shelter/area outside the hazard zone.
- Provide written tsunami hazard information to the populace, including:
    - Hazard zone maps
    - Evacuation routes
    - Basic tsunami information

  These instructions can be distributed through mailings, i.e., utility bills, within phone books, and posted at common meeting points such as libraries and public buildings throughout the community.

- Encourage local schools to meet the following guidlines:
    - Inclusion of tsunami information in primary and secondary school curriculums.
    - NWS will help identify curriculum support material.
    - Practice tsunami evacuation drills when located within the defined hazard zone at least biennially.
    - Provide written safety material to all staff and students.

Guideline 6: Administrative

No program can be successful without formal planning and pro-active administration. To be recognized in the Storm/TsunamiReady Program:

1. Tsunami warning and hazardous weather plans must be in place and approved by the local governing body. These plans must address the following:

- Hazard/risk assessment.
- Warning point procedures.
- EOC activation guidelines and procedures.
- Tsunami hazard zone map with evacuation routes.
- Procedures for canceling an evacuation for less-than-destructuve tsunamis.
- Procedures for reporting storm and tsunami damage to the local NWS office in near real-time.
- Storm spotter activation criteria and reporting procedures if applicable.

- Storm spotter roster and training record if applicable.
- Guidelines and procedures for activation of sirens, cable TV overide, and/or local system activation in accordance with state Emergency Alert System (EAS) plans, and warning fan-out procedures, if necessary.
- Annual exercises.

2. Local community officials must conduct a bi-yearly visit/discussion with local NWS Forecast Office Warning Coordination Meteorologist or Tsunami Warning Center personnel. This can be a visit to the NWS office, phone discussion, or e-mail contacts.

TsunamiReady Administration

Oversight of the TsunamiReady program is accomplished within the NWS by the National StormReady Board (the Board). The Board is responsible for changes in community recognition guidelines. Proposed guideline changes shall be directed to the Board for action. The Board consists of the NWS Regional Warning Coordination Meteorologist (WCM) Program Leaders, the National WCM Program Manager, Federal Emergency Management Administration representative, National Emergency Management Association representative, and an International Association of Emergency Managers representative. (See StormReady Organization and Operations Manual for further information on the National StormReady Board and program.)

Oversight of the TsunamiReady program at the local level is provided by the appropriate Local StormReady board. The Local StormReady board has the authority to enhance TsunamiReady to fit regional situations. At a minimum, this board consists of:

- NWS Weather Forecast Office's Meteorologist-in-Charge
- NWS Weather Forecast Office's Warning Coordination Meteorologist
- State emergency service director or designee
- Local emergency management association president or designee
- Tsunami Warning Center's Geophysicist-in-Charge
- Tsunami Hazard Mitigation Program representative

The Local StormReady Board is responsible for all steps leading to the recognition of the TsunamiReady community. This includes implementing procedures for site verification visits and application review.

TsunamiReady Benefits

Benefits of becoming a TsunamiReady Community include:

- Community is more prepared.
- Regularly scheduled education forums.

- Increase contacts with experts (emergency managers, researchers, NWS personnel).
- Identify community readiness resource needs.
- Improve positioning to receive State and Federal funds.
- Enhances core infrastructure to support other community concerns.
- Permits public to see how their tax money is being spent in hazard programs.

Acknowledgments/Reference

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The following are other sources for tsunami readiness:

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